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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/994,096

11/26/2001

Shoupu Chen

83489DMW

8284

7590

09/15/2004

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EXAMINER

KIM, CHONG R

ART UNIT

PAPER NUMBER

2623

DATE MAILED: 09/15/2004

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Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/994,096

Applicant(s)

CHEN ET AL.

Examiner

Charles Kim

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM  
THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-53 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-18 and 28-44 is/are rejected.
- 7) ☒ Claim(s) 19-27 and 45-53 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 March 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 2.4.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

## DETAILED ACTION

### *Double Patenting*

1. A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and useful process ... may obtain a patent therefor ..." (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957); and *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970).

A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the conflicting claims so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

2. Claims 1-18, 28-33, 35-44 are provisionally rejected under 35 U.S.C. 101 as claiming the same invention as that of claims 1-18, 19-24, 26-35 respectively of copending Application No. 09/740,562. This is a provisional double patenting rejection since the conflicting claims have not in fact been patented. The Examiner notes that the "facial features" in line 15 of claim 1 in the instant application is defined as "eyebrows, eyes, nose, mouth, and facial region" on page 18, lines 23-25 of the applicant's specification. In this case, the "facial features" are interpreted as eyes; and therefore, the step of "locating facial features using identified eye positions" is considered an inherent feature in claim 1 of the '562 application. **Note:** The statutory double patenting rejection can be overcome by amending the claims to indicate that the "facial features" in claims 1 and 28 do not comprise the eyes (for example, features such as eyebrows, nose, mouth, ect.). In the case that the claims are amended according to the suggestions above, it appears that a non-statutory obviousness-type double patenting rejection would be applicable

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(see cited prior art in the "Conclusion" section below); wherein the non-statutory double patenting rejection can be overcome by a terminal disclaimer in compliance with 37 CFR 1.321(c). See 37 CFR 1.130(b).

### ***Claim Objections***

The following quotation of 37 CFR § 1.75(a) is the basis of objection:

(a) The specification must conclude with a claim particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention or discovery.

3. Claims 19 and 45 are objected to under 37 CFR § 1.75 (a) as failing to particularly point out and distinctly claim the subject matter which the applicant regards as his invention or discovery.

Referring to claim 19, the phrases "the estimated locations" in line 1 and "the automatically identified eye positions" in lines 2-3 lack antecedent basis. It appears that the applicant intended the phrases to read "estimated locations" and "the identified eye positions" respectively. A similar objection is applicable to claim 45. Appropriate corrections are required.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

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4. Claims 1-18, 28-44 are rejected under 35 U.S.C. 102(e) as being anticipated by Chen et al., U.S. Patent Application Publication No. 2002/0114495 ("Chen").

Referring to claim 1, Chen discloses a digital image processing method for detecting facial features in a digital image, comprising the steps of:

- a. detecting iris pixels (page 1, paragraph 7);
- b. clustering the iris pixels (page 1, paragraph 7);
- c. selecting at least one of the following methods to identify eye positions in an image:
  - i) applying geometric reasoning to detect eye positions using the iris pixel clusters (page 1, paragraph 7);
  - ii) applying a summation of squared difference method to detect eye positions based upon the iris pixel clusters (page 1, paragraph 7); and,
  - iii) applying a summation of squared difference method to detect eye positions from the pixels in the image;wherein the method applied is selected on the basis of the number of iris pixel clusters (page 1, paragraph 7); and
- d. locating facial features using identified eye positions (page 1, paragraph 7. Note that the "facial features" are interpreted as the eyes).

Referring to claim 2, Chen further discloses that the less than two iris pixel clusters are detected and wherein detection method iii) is applied (pages 2-5).

Referring to claim 3, Chen further discloses that at least two iris pixel clusters are detected and wherein method i) is applied (pages 2-5).

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Referring to claim 4, Chen further discloses that wherein method i) does not detect eye positions and wherein method ii) is then applied to detect eye positions (pages 2-5).

Referring to claim 5, Chen further discloses that wherein method ii) does not detect eye positions and wherein method iii) is then applied (pages 2-5).

Referring to claim 6, Chen further discloses that the step of applying geometric reasoning using the detected iris color pixels comprises the steps of: finding the center of each iris pixel cluster; dividing the iris pixel clusters into left-half pixel clusters and right-half pixel clusters; and detecting a pair of eyes based on the geometric relationship between the iris pixel clusters (pages 2-5).

Referring to claim 7, see the rejection of at least claim 6 above.

Referring to claim 8, Chen further discloses that the step of applying the summation squared difference method to detect eye positions based upon the iris pixel clusters, comprises the steps of: finding the center of each iris pixel cluster; defining a window of pixels surrounding each of the centers of the iris pixel clusters in the image, dividing the iris pixel clusters into left-half pixel clusters and right-half iris pixel clusters; locating the most likely left eye position based on the summation of squared difference between an average eye and patches of the image centered at each of the pixels in each of the windows surrounding a left-half iris pixel cluster; and locating the most likely right eye position based on the summation of squared difference between an average eye and patches of the image centered at each of the pixels in each of the window surrounding a right-half iris pixel cluster (pages 2-5).

Referring to claim 9, see the rejection of at least claim 8 above.

Referring to claim 10, Chen further discloses that the step of applying a summation of squared difference method to detect eye positions from the pixels in the image comprises the steps of: dividing the image pixels into left-half pixels and right-half pixels; locating the most likely left eye position based on the summation of squared difference between an average eye and patch of the image centered at each of the left-half pixels; and locating the most likely right eye position based on the summation of squared difference between an average eye and patch of the image centered at each of the right-half pixels (pages 2-5).

Referring to claim 11, Chen further discloses detecting a skin color region in the image, wherein the summation of the squared difference method is only applied to pixels within the skin color region (pages 2-5).

Referring to claim 12, see the rejection of at least claim 10 above.

Referring to claim 13, see the rejection of at least claim 11 above.

Referring to claim 14, see the rejection of at least claim 10 above.

Referring to claim 15, see the rejection of at least claim 11 above.

Referring to claim 16, Chen further discloses the steps of detecting a skin color region in the image, and dividing the skin color region into a left-half region and right-half region wherein the iris pixel clusters are divided into left-half iris pixel clusters and right-half iris pixel clusters based upon the region in which they are located (pages 2-5).

Referring to claim 17, see the rejection of at least claim 16 above.

Referring to claim 18, Chen further discloses the step of validating iris pixel clusters, wherein the selection of the method to be applied is made based upon the number of valid clusters (pages 2-5).

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Referring to claims 28-38, see the rejections of claims 1-11 respectively above.

Referring to claim 39, Chen further discloses that the step of detecting iris color pixels comprises using a Bayes model and: measuring the red intensity of the pixels in the skin color region; determining the probability that each pixel is an iris based upon the red intensity of the pixel; determining the probability that each pixel is not an iris based upon the red intensity of the pixel; and applying the Bayes model to the probability that the pixel is an iris, the probability that the pixel is not an iris, the probability of the occurrence of an iris in the skin colored region and probability of the occurrence of a non-iris pixel in the skin colored region (pages 2-5).

Referring to claim 40, see the rejection of at least claim 13 above.

Referring to claim 41, see the rejection of at least claim 39 above.

Referring to claim 42, see the rejection of at least claim 40 above.

Referring to claim 43, see the rejection of at least claim 16 above.

Referring to claim 44, see the rejection of at least claim 17 above.

***Allowable Subject Matter***

5. Claims 19-27, 45-53 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.



***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- a. Chen et al., U.S Patent Application Publication No. 2003/0021448 discloses a method for locating facial features based on identified eye positions.
- b. Chen et al., U.S. Patent Application Publication No. 2002/0106112 discloses a method for detecting human irises in an image.
- c. Hoshen, U.S. Patent No. 6,108,446 discloses a method for extracting cluster shape features from a digital image.
- d. Okumura, U.S. Patent No. 5,878,156 discloses a method for detecting the location of facial features (eye brows) using identified eye positions.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Charles Kim whose telephone number is 703-306-4038. The examiner can normally be reached on Mon thru Thurs 8:30am to 6pm and alternating Fri 9:30am to 6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amelia Au can be reached on 703-308-6604. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.


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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



ck

September 7, 2004

  
Jon Chang  
Primary Examiner